



Slideshow

FULL DETAILS AND TRANSCRIPT

Providing Positive Feedback in Elementary Math

Don Pedro Elementary School, California • November 2007

Topic: Encouraging Girls in Math and Science
Practice: Prescriptive Feedback

Highlights

- This sixth-grade math teacher uses a variety of techniques to gauge students' understanding and level of self-confidence before she provides them with informational feedback.
- The teacher frequently reminds her students that everybody makes mistakes, and mistakes are learning opportunities.
- Students are praised for their effort —the focus is on the process rather than the final answer.
- When common problems are identified, the teacher provides the class with prescriptive feedback geared to highlight the key steps involved in solving the problem.

About the Site

Don Pedro Elementary School
Ceres, CA

Demographics

61% Hispanic

31% English Language Learners

53% Females

79% Free or Reduced-price Lunch

9% Special Education

Math classrooms often emphasize informational feedback, including:

- Provide positive, substantive feedback to students as they solve problems.
- Encourage students to correct misunderstandings and learn from their mistakes.
- Develop a classroom environment in which learning, improving, and understanding are emphasized.
- Highlight the importance of effort for succeeding at difficult tasks.
- Avoid praising general intelligence.
- Make sure that there are multiple opportunities for students to receive feedback on their performance.

Full Transcript

Presentation Title: Providing Positive Feedback in Elementary Math, Don Pedro Elementary School

Ms. Anderson, a sixth grade teacher at Don Pedro Elementary School, uses prescriptive, informational feedback to help students understand why they did or did not perform well on a particular math task. The right kind of feedback can help students improve performance through persistence and effort, and can alter perceptions about math.

Slide #1: Checking for Understanding

Frequent assessment of student progress is an integral part of the feedback process.

Ms. Anderson asks students to use whiteboards to show their work as they solve math problems together. When students hold up their work, she can quickly see how each individual student answered the problem, allowing her to address any misconceptions.

Audio: [Teacher interacting with class.]

Teacher: I want you to actually do the problem. We have negative eight plus a positive two. Negative eight plus a positive two. Show me your work. Do your answers. [students speaking, inaudible.] No, just show me your answer, but give me your answer OH! We have lots of variety today. I like variety. Okay, challenge problem. Oops, what happened here? Tonya, eight minus two is five? No, Tonya knows it's not, ok Tonya is a super star. You guys remember sometimes, and you know what was good about Tonya's answer, even though it was wrong, she did the absolute value. She worked on absolute value for that one. So, she showed me her work, and I see that Erica has showed me her work, using counters.

Slide #2: Do Students Feel They Got It?

Informational feedback addresses both the cognitive and emotional aspects of learning. In addition to checking for students' understanding, Ms. Anderson also gauges how confident or frustrated her students are.

Ms. Anderson asks students to use simple gestures to signal if they understand the material covered so far in her lessons. Raising all ten fingers means full confidence, three fingers shows a low level of confidence, and no fingers indicates zero confidence.

Audio: [Teacher interacting with class.]

Teacher: Now, today's lesson is about adding integers. How many of you feel like you know a little bit about adding integers already? [students speaking, inaudible.] Alright? Just a little? On a scale of one to ten, with ten being the greatest, you think you are ready for adding integers, you're going to hold up that many fingers. Nine... a little bit less... five... you're so-so, you kind of got it, kind of don't. Zero is "Oh, Ms. Anderson, I need more help than you can imagine."

Slide #3: Mistakes as Growth Opportunities

When Ms. Anderson is teaching math, she points out that everybody makes mistakes and that understanding errors can avoid mistakes in the future. Ms. Anderson treats errors as opportunities for learning and understanding.

Audio: [Teacher interacting with class.]

Teacher: A negative seven plus two. I'm going to work with an absolute value here. What is the absolute value, class, of negative seven?

Students: Seven.

Teacher: Just seven. Right? Now, what's the absolute value of two?

Students: Two.

Teacher: Just two. So, what is seven plus two?

Students: Nine.

Teacher: Nine. [writing on chalkboard.] OK, does that look like it would be the right answer?

Students: No.

Teacher: No? What did I do wrong? Now, to me, to me, I think that's confusing. I think that's confusing because "absolute value" just sounds really difficult to remember.

Students: Yeah.

Teacher: Do you have a different way that you could use to remember it?

Slide #4: Focus on Process

Ms. Anderson focuses on the problem-solving process rather than on the final answer. She finds out where problems occur and what parts of the process students don't understand. She praises them for showing how they reached their answer and provides feedback on the steps of each problem.

Audio:

For kids to always be writing down the steps, the process that they go through... I don't like it when a student will just show me an answer on the board, just a number, without the problem with it because I don't know what that means.

[To student] "Amara, what is the additive inverse of seventeen? [Student responds.] Okay, so what is the opposite of positive seventeen?... Negative seventeen. Well done, and I like the way that you've walked us through it."

Slide #5: Prescriptive Feedback

Once Ms. Anderson has reviewed her students' work for any misunderstandings, she provides prescriptive, informational feedback. This feedback is geared to highlight the key steps involved in solving the problem.

In the lesson, Ms. Anderson walks her students through the math exercise of adding up the numbers (positive 7) and (negative 8), talking through her thinking as she solves the problem using both math manipulatives and the number line. Students can choose one of three different approaches to tackle this problem, seeing how each approach leads to the same answer.

Audio:

Teacher to one student: So you're right up here, you're starting at zero, you're drawing a line over here, to positive seven, and then you're drawing another line above it, back to negative eight.

Teacher to class: It doesn't go back to negative eight. It doesn't go back to negative eight. You go back... Okay, everybody freeze for a minute. Very important concept, because I've seen it wrong now on five papers, so let's stop right here and review. When we did this problem, when we did the discs, I told you we had seven discs, Okay? We have seven. One, two, three, four, five, six, seven. Right? Those were positive. Then, I asked you to go back, and add to it a negative eight. I paired them up, right? One, two, three, four, five, six, seven, and eight. I don't go back to negative eight. I go backwards negative eight spaces. So, some

of you ended up way down here at negative eight, but that is not what the problem says. It says to start here, you go up positive seven, then you go backwards this way, negative eight spaces. So, I start here. Remember, just going backwards is a negative. Going backwards is a negative. I don't have to jump over to the negative side, I just want to go down eight spaces. So, I start here, so I'm going to count: one, two, three, four, five, six, seven, and eight. And this now will be my answer: negative one. Do you see how that answer came out the same?

Students: Yes.

Teacher: So, it doesn't matter if I draw it on the number line, if I draw it with counters, or I just do the math. All three will get me the correct answer. You have to understand the process and how to get there, so every time it changes, you know what to do next.

Slide #6: Encouraging Effort

Ms. Anderson encourages students to keep trying. She praises students for the progress they're making and for their level of effort. Her students enjoy showing what they know and receiving feedback on their work. When feedback is given in a positive and supportive tone, even the most withdrawn students in class start to participate in a more active way.

Audio:

I think a lot kids believe that math is the problem, that that's why it was created. But math is the solution to the problems. So, if they understand the concept that math was created to make your life easier, and they start looking at it in a positive aspect instead of having to do a hundred math problems as a negative, they seem to grasp that it's not that bad. A lot of kids will admit to hating math before and they love it now. They like the change. I think it's because they are interactive. Just letting them show me what they know - they think that's great, and I do too. I want to know what level they are at so that I know where to plan my next lesson.

Slide #7: Collaboration

Prescriptive feedback emphasizes collaboration rather than competition. For example, instead of noting who got the highest score on the test, Ms. Anderson acknowledges the efforts of the class as a whole. Her students demonstrate that they have internalized the principles of prescriptive feedback when they spontaneously praise peers for their work, thereby contributing to a positive and supportive classroom climate.

Audio: [Teacher interacting with class.]

Positive and negative integers are opposites. Is she right? Absolutely. Annette, what's your question? ... Wasn't that only in six words? Did she do a nice job? Ten or less, yeah! Annette's complimenting Erika and her team because they got it done in less than ten words. They did it in six words, they were able to tell me what the difference between the two were. Ok, let's continue on.